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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,809	08/25/2003	Thomas J. Kelly	08350.3304-03	1320
58982	7590	06/30/2008		
CATERPILLAR/FINNEGAN, HENDERSON, L.L.P. 901 New York Avenue, NW WASHINGTON, DC 20001-4413				
			EXAMINER PARK, JEONG S	
			ART UNIT 2154	PAPER NUMBER
			MAIL DATE 06/30/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,809	KELLY ET AL.	
	Examiner	Art Unit	
	JEONG S. PARK	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 April 2008.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-24 and 26-38 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-24 and 26-38 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 07 June 2007 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/24/2008</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/24/2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-24 and 26-38 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-11, 13, 14, 16-24 and 26-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Gandolfo (U.S. Pub. No. 2003/0224787 A1).

Regarding claims 1, 26 and 38, Gandolfo teaches as follows:

a method for dynamically establishing an ad-hoc network including a plurality of machines (building communications paths across the multi-hop ad-hoc network, see, e.g., page 3, paragraph [0037]), one or more of which may move within a work environment and each of which includes a gateway (PHY layer 410 in figure 4A communicates with the rest of the network via wireless link, see, e.g., page 2, paragraph [0014]), the method performed by a respective gateway included within a respective one of the machines and comprising:

identifying a first sub-network (first network or network A 550a in figure 5) of the plurality machines (first devices) within direct communication range of the respective machine (the first controller having a first usable physical area indicating a farthest distance to which the first controller can successfully communicate, see, e.g., page 3, paragraph [0038]);

storing, by the respective machine (the first controller for controlling operation of the first network, see, e.g., page 3, paragraph [0041]), information identifying and associating each of the machines in the first sub-network (control and administrative information between the controller and the various devices, see, e.g., page 2, paragraph [0021]);

identifying a second sub-network (second network, see, e.g., page 3, paragraph [0038] or network C 550c in figure 5) of the plurality machines that are in direct communication range of one or more of the machines in the first sub-network and each other, the second sub-network including at least one machine not included in the first

sub-network (overlapping networks, see, e.g., page 4, paragraph [0064]-[0065] and figure 5);

storing, by the respective machine (the first controller for controlling operation of the first network, see, e.g., page 3, paragraph [0041]), information identifying and associating each of the machines in the second sub-network (control and administrative information between the controller and the various devices, see, e.g., page 2, paragraph [0021]);

forwarding a packet received from a first machine (device A-1 521a in figure 6B) included in the first sub-network (550a in figure 6B) to a second machine (device A-2 522a in figure 6B) included in the first sub-network based on a determination that the second machine is either directly or indirectly within communication range of a third machine (device B-1 521b in figure 6B) included the second sub-network (550b in figure 6B)(hidden overlapping networks, see, e.g., page 6, paragraph [0086]-[0088]); and

updating the stored information identifying and associating the machines included in the first and second sub-networks of the plurality of machines based on at least one of: the respective machine changing locations within the environment and any of the machines included in the first or second sub-networks changing locations within the environment (discovering the links between mobile devices and to build and update those paths so any user can communicate with any other users, see, e.g., page 4, paragraph [0063]).

Regarding claims 2, 3, 22-24, 27 and 28, Gandolfo teaches as follows:

wherein the packet is destined for a destination machine (device B-1 521b) not included in the first (550a) or second (560a) sub-networks of the plurality of machines, and forwarding the packet to the destined or any work machine via second and third work machines based on the determination achieved by the claim 1 (indirect overlapping networks, see, e.g., page 6, paragraph [0090] and figure 6C).

Regarding claims 4, 5, 16, 17, 29 and 30, Gandolfo teaches as follows:

broadcasting an admission packet (the controller sends the beacon to all of the devices, see, e.g., page 2, paragraph [0019] and page 5, paragraph [0077]);

each beacon contains information including contention access period (see, e.g., page 2, paragraph [0020]); and

the network passes control and administrative information between the controller and the various devices through the received contention access period information through the beacon from the controller (see, e.g., page 2, paragraph [0021]).

Regarding claims 6-9, 14, 18, 19 and 31-34, Gandolfo teaches as follows:

updating the respective machine periodically based on the location and removing any machines not in direct communications with any work machines (discovering the links between mobile devices and to build and update those paths so any user can communicate with any other users, see, e.g., page 4, paragraph [0063]).

Regarding claims 10, 20 and 35, Gandolfo teaches as follows:

selecting one of the at least two data links to forward the packet to the first machine based on at least one of an availability status of each of the data links, a cost of communicating over each data link, a quality of service associated with each data

link, a priority of the packet, and a transmission time associated with each data link (selecting its network by choosing a controller based on link quality, see, e.g., page 5, paragraph [0078]).

Regarding claims 11 and 36, Gandolfo teaches as follows:

forwarding a destined packet to the second machine based on the first network table (network information data exchanged between controllers, see, e.g., page 4, paragraph [0050]).

Regarding claim 13, Gandolfo teaches as follows:

a system for dynamically establishing communications between a plurality of machines (building communications paths across the multi-hop ad-hoc network, see, e.g., page 3, paragraph [0037]), one or more of which may move within an environment (discovering the links between mobile devices and to build and update those paths so any user can communicate with any other users, see, e.g., page 4, paragraph [0063]), the system comprising:

a first machine positioned in a first location within the environment (the first controller having a first usable physical area indicating a farthest distance to which the first controller can successfully communicate, see, e.g., page 3, paragraph [0038]), a first gateway included in the first machine that connects an on-board data link with an off-board data link (PHY layer 410 in figure 4A communicates with the rest of the network via wireless link, see, e.g., page 2, paragraph [0014]);

a network table (network information data, see, e.g., page 3, paragraph [0039]) included in the first gateway that identifies machines that are either directly or indirectly

within communication range of the first machine (the first controller having a first usable physical area indicating a farthest distance to which the first controller can successfully communicate, see, e.g., page 3, paragraph [0038]), wherein the network table contains:

information identifying and associating a first sub-network of the plurality of machines that are within communication range of the first machine and other (the first controller having a first usable physical area indicating a farthest distance to which the first controller can successfully communicate, see, e.g., page 3, paragraph [0038]); and

information identifying a second sub-network the plurality of machines that are within direct communication range of at least one of the machines in the first sub-network and each other, the second sub-network including at least one machine not included in the first sub-network (overlapping networks, see, e.g., page 4, paragraph [0064]-[0065] and figure 5);

wherein the first gateway is configured to:

updating the network table based on at least one of the first machine changing locations within the environment and any of the machines included in the first or second sub-networks changing locations within the environment (discovering the links between mobile devices and to build and update those paths so any user can communicate with any other users, see, e.g., page 4, paragraph [0063]);

receive a packet over the off-board data link from a second machine included in the first sub-network, wherein the packet identifies a destination machine (it is inherent

to send a packet after discovering the links and building communication paths, see, e.g., page 2, paragraph [0023]);

forward the received packet to a third machine included in the first sub-network based on a determination that the destination machine is associated with the third machine in the network table (hidden overlapping networks, see, e.g., page 6, paragraph [0086]-[0088]) and figure 6A-C); and

send information included in the received packet to the on-board data link when the packet identifies the first machine as the destination machine (PHY layer receives a packet from the off-board data link and sends to the upper layers, see, e.g., page 2, paragraph [0014]).

Regarding claim 21, Gandolfo teaches as follows:

Translate the information included in the received packet to a format compatible with the on-board data link when the packet identifies the first machine as the destination machine (mobile host, as well known within the art, handles an application layer as a network host, so if the packet is destined to that host, then it will process the packet to upper layer with an accepted format to the upper layer, see, e.g., page 2, paragraph [0014]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12, 15 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (U.S. Pub. No. 2003/0224787 A1) and further in view of Computer Networks a Systems Approach Section 4.2.2 (by Larry L. Peterson et al., 2dn edition, pages 284-288, published by Morgan Kaufmann Publishers, on October 1999).

Regarding claims 12, 15 and 37, Gandolfo teaches all the limitations as presented above per claims 1 except for building and using two network tables to forward a packet to a destination.

The general concept of building and using routing tables is well known within the art as illustrated by Computer Networks a Systems Approach Section 4.2.2 which teaches as follows:

initial distances stored at each node (each node knows all connections to its neighbors, see, e.g., page 284, third paragraph, Figure 4.14, Table 4.5 on page 285);

an initial routing table from the step of exchanging its personal list of distances between its directly connected neighbors (see, e.g., page 285, first paragraph, Table 4.5, Figure 4.14); and

a final routing table resulted from a few exchanges of the information between neighbors (see, e.g., page 286, first and second paragraph, Table 4.7 and 4.8, Figure 4.14).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Gandolfo to include a routing table which includes all direct and

indirect connections for each node, as taught by Computer Networks a Systems Approach Section 4.2.2 in order to simplify the routing process.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEONG S. PARK whose telephone number is (571)270-1597. The examiner can normally be reached on Monday through Friday 7:00 - 3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S. P./
Examiner, Art Unit 2154
June 25, 2008

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/Joseph E. Avellino/
Primary Examiner, Art Unit 2146